

CLAIMS

We Claim:

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2017
1. A method of enhancing the solubility of iron amino acid
chelates and iron proteinates comprising admixing an effective
amount of an organic acid solubilizing agent with an iron amino
acid chelate or iron proteinate having a ligand to metal molar
ratio from about 1:1 to 4:1.

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2. A method as in claim 1 wherein the ligand to metal molar
ratio is from about 2:1 to 3:1.

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3. A method according to Claim 1 wherein said solubilizing
agent is selected from the group consisting of citric acid,
ascorbic acid, acetic acid, lactic acid, malic acid, succinic
acid, and combinations thereof.

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4. A method according to Claim 1 wherein the solubilizing
agent to iron content weight ratio is from about 5:1 to 1:1.

5. A method according to Claim 1 wherein said solubilizing
agent is acetic acid and wherein the acetic acid to iron content
weight ratio is from about 3:1 to 1:1.

6. A method according to Claim 1 wherein said solubilizing agent is ascorbic acid and wherein the ascorbic acid to iron content weight ratio is from about 5:1 to 1:1.

5 7. A method according to Claim 1 wherein said solubilizing agent is citric acid and wherein the citric acid to iron content weight ratio is from about 3:1 to 1:1.

10 8. A method according to Claim 1 wherein said solubilizing agent is lactic acid and wherein the lactic acid to iron content weight ratio is from about 3:1 to 1:1.

15 9. A method according to Claim 1 wherein said solubilizing agent is malic acid and wherein the malic acid to iron content weight ratio is from about 3:1 to 1:1.

20 10. A method according to Claim 1 wherein said solubilizing agent is succinic acid and wherein the succinic acid to iron content weight ratio is from about 3:1 to 1:1.

25 11. A method according to Claim 1 wherein said solubilizing agent is a combination of ascorbic acid and citric acid at a molar ratio from 10:1 to 1:1, and wherein the iron content to solubilizing agent ratio is from about 5:1 to 1:1 by weight.

12. A method according to Claim 1 wherein said iron amino acid chelate or iron proteinate and said solubilizing agent are in a particulate form and wherein said mixing step produces a particulate homogenous mixture prior to hydration.

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13. A method according to Claim 12 wherein said particulate mixture is hydrated.

14. A method according to Claim 1 wherein said iron amino acid chelate or iron proteinate and said solubilizing agent are hydrated prior to said admixing step.

15. A method according to Claim 1 wherein said iron amino acid chelate or iron proteinate is in a particulate form and wherein said solubilizing agent is in a liquid form when admixed.

16. A method according to Claim 1 wherein said iron amino acid chelate or iron proteinate is in a liquid form and wherein said solubilizing agent is in a particulate form when mixed.

17. A method of enhancing the solubility of an iron amino acid chelate- or iron proteinate-sugar complex comprising admixing an effective amount of an organic acid solubilizing agent into said iron amino acid chelate- or iron proteinate-sugar complex.

18. A method according to Claim 17 wherein said iron amino acid chelate- or iron proteinate-sugar complex comprises iron, an amino acid or proteinate ligand, and a sugar, wherein said ligand to iron molar ratio is from about 1:1 to 4:1 and wherein said sugar content to said iron content molar ratio is from about 1:1 to 3:1.

19. A method according to claim 18 wherein said ligand to iron molar ratio is from about 2:1 to 3:1.

20. A method according to Claim 18 wherein said solubilizing agent is selected from the group consisting of citric acid, ascorbic acid, acetic acid, lactic acid, malic acid, succinic acid, and combinations thereof.

21. A method according to Claim 18 wherein the solubilizing agent to iron content ratio is from about 4:1 to 1:1 by weight.

22. A method according to Claim 18 wherein said sugar is selected from the group consisting of glucose, sucrose, and combinations thereof.

23. A method of enhancing the solubility of an iron amino acid chelate or iron proteinate-containing aqueous solution in the presence of a sugar comprising admixing an effective amount

of an organic acid solubilizing agent into said iron amino acid chelate or iron proteinate aqueous solution prior to adding said sugar to said solution.

5 24. A method according to Claim 23 wherein said iron amino acid chelate or iron proteinate has a ligand to iron molar ratio from about 1:1 to 4:1 and wherein said sugar content to said iron content molar ratio is from about 1:1 to 3:1.

10 25. A method according to Claim 24 having a ligand to iron molar ratio from about 2:1 to 3:1.

26. A method according to Claim 23 wherein said solubilizing agent is selected from the group consisting of citric acid, ascorbic acid, acetic acid, lactic acid, malic acid, succinic acid, and combinations thereof.

27. A method according to Claim 23 wherein the solubilizing agent to iron content ratio is from about 4:1 to 1:1 by weight.

20 28. A method according to Claim 23 wherein said sugar is selected from the group consisting of glucose, sucrose, and combinations thereof.